

Final 2015 *Vibrio parahaemolyticus* Management Plan

Vibrio parahaemolyticus Management Plan

June 1 – August 31, 2015



New Jersey Department of Environmental Protection

Division of Water Monitoring and Standards / Division of Fish & Wildlife

and

New Jersey Department of Health

Consumer, Environmental and Occupational Health Service

Seafood / Shellfish Project

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A. Introduction

Vibrio parahaemolyticus nationally reported illnesses have increased each year from 1992 through 2014. *Vibrio parahaemolyticus* has become a significant problem for both regulators and industry. Despite the implementation of *Vibrio parahaemolyticus* management plans by States on the east coast and industries diligent efforts to implement such plans, shellfish related illnesses continue to occur.

New Jersey did have two confirmed illnesses of *Vibrio parahaemolyticus* (*Vp*) in 2014 attributed to Delaware Bay oysters; one was harvested from Shell Rock oyster beds and one from Cohansey oyster beds within New Jersey waters. These sporadic illnesses did not result in an outbreak or closure.

During the 2014 *Vibrio parahaemolyticus* season, the Bureau of Marine Water Monitoring completed the 3rd year of the *Vibrio parahaemolyticus* study, that was designed to mimic the harvest and practices allowed in the *Vibrio parahaemolyticus* Management Plan. In 2014 the Leeds Point Laboratory added the capability to analyze for both *trh* and *tdh* virulent strains as well as for total *Vp* by both PCR and the direct plating methods. The study also collected samples from Great Bay, to study vibrios from different salinity waters.

Oyster samples from sub-tidal harvest were collected from both Delaware Bay and Great Bay. For the Delaware Bay, the NJDEP Bureau of Marine Water Monitoring shadowed industry and collected oysters on a weekly basis from May through August. Some oysters were immediately iced, some were kept unrefrigerated with shading for 6 hours and other oysters were kept unrefrigerated with shading for 7 hours. Data suggests that levels for all strains of *Vibrio parahaemolyticus* (*tlh*, *tdh*, *trh*) are consistently low when removed from the water, and climb, as expected, when subjected to time without refrigeration. Monitoring data indicated that the levels for all strains of *Vibrio parahaemolyticus* in oyster tissue were within expected ranges. Shell temperatures and shaded air temperatures were measured for all post-harvest handling. The data suggests that the shell temperature is much greater than the air temperature from mid-June to mid-July around the time of the summer solstice, when the solar radiation and sun angle reach a maximum for New Jersey's latitude, which also matches with the time frame of historic illness reports. The data from the 2014 *Vibrio parahaemolyticus* study is being used to shift the harvest hours for 2015, by changing the month of 6 hours from harvest to refrigeration from mid-June to mid-July. The data supports that the rest of the *Vibrio parahaemolyticus* can continue with 7 hours from harvest to refrigeration, so overall hours of harvest for the season will not change.

Oyster samples collected from Great Bay were performed at two stations every 2 weeks from May through August, one by the mouth of the Mullica River (low salinity) and one closer to Little Egg Inlet (high salinity); both were iced immediately. These samples were collected to study the differences for all strains of *Vibrio parahaemolyticus* related to salinity. The data suggests that salinity does effect the total *Vibrio parahaemolyticus* levels. Lower salinity shows generally higher levels of total of *Vibrio parahaemolyticus*. However we did not see the same

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effect for the virulent strains (*trh*, *tdh*), where there was no correlation observed. This may be due to the very low levels of *trh* and *tdh* measured in oyster tissue. The highest result was 9.3 MPN/g.

B. Background

Vibrio parahaemolyticus is an organism that occurs naturally in coastal waters. It is not related to pollution, which means that traditional controls for shellfish sanitation related to growing water classification are not effective. Instead, the occurrence of this pathogen in elevated levels appears to be directly related to water temperature and post-harvest handling. *Vibrio parahaemolyticus* levels increase rapidly when shellfish are exposed to temperatures greater than 70 degrees Fahrenheit.

Vibrio parahaemolyticus is a curved, rod-shaped, Gram-negative bacterium found in the marine and estuarine environment. When shellfish, usually oysters, are eaten raw or undercooked with high levels of *Vibrio parahaemolyticus* it may result in gastrointestinal illness in humans. Symptoms typically resolve within 72 hours, but can persist for up to 10 days in immunocompromised individuals.

Procedures for dealing with *Vibrio parahaemolyticus* have been developed over the past several years through the Interstate Shellfish Sanitation Conference (ISSC) and are part of the National Sanitary Shellfish Program (NSSP) Model Ordinance. In August of 2007, the conference adopted a plan for managing *Vibrio parahaemolyticus*. This plan was subsequently amended by the Executive Board of the ISSC in June of 2008. NSSP Chapter VIII - Control of Shellfish Harvesting was revised on September 12, 2012 to further enhance *Vibrio parahaemolyticus* and *Vibrio vulnificus* controls.

The New Jersey's *Vibrio parahaemolyticus* Management Plan addresses program coordination, response to potential outbreak, post-harvest time and temperature controls, hours of harvest for tidal and intertidal, and Hazard Analysis and Critical Control Points (HACCP) plan requirements. In addition, the *Vibrio parahaemolyticus* Management Plan recommends additional best management practices to be implemented to further minimize risk from *Vibrio parahaemolyticus*.

C. Coordination of New Jersey Agencies Responsible for Shellfish Sanitation

The National Shellfish Sanitation Program (NSSP) is accomplished in New Jersey through a coordinated effort of four agencies. These agencies, their physical locations, their role in shellfish sanitation and their relationship to one another are shown below. Implementation of the *Vibrio parahaemolyticus* Management Plan will require cooperation and communication among

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these agencies.

1. New Jersey Department of Environmental Protection

Bureau of Marine Water Monitoring
Division of Water Monitoring and Standards
P.O. Box 405
929 Stoney Hill Road
Leeds Point, NJ 08220
609-748-2000
(Water monitoring, shellfish classification charts, special permits)

Bureau of Shellfisheries
Division of Fish and Wildlife
P.O. Box 418
360 North Route 9
Port Republic, NJ 08241
609-748-2020
(Licensing, shellfish leases, resource management)

Bureau of Law Enforcement – Marine Region
Division of Fish and Wildlife
P.O. Box 418
360 North Route 9
Port Republic, NJ 08241
609-748-2050
(Patrols, enforcement, inspections)

2. New Jersey Department of Health

Seafood / Shellfish Project
Division of Consumer Environmental and Occupational Health
P.O. 369
Trenton, NJ 08625-0369
609-826-4935
(Inspections, certified dealers, depuration, illness reporting and investigation)

The following agencies have primary responsibility for decision making and implementation of the following aspects of the *Vibrio parahaemolyticus* Management Plan:

1. NJDEP Bureau of Marine Water Monitoring

- Develop and Coordinate the *Vibrio parahaemolyticus* Management Plan.
- Analyze water and air temperature data in to order conduct a risk analyses as the basis for developing a *Vibrio parahaemolyticus* Management Plan to control a naturally occurring pathogen.
- Develop control strategies to minimize potential *Vibrio parahaemolyticus* illnesses
- Close affected oyster growing areas if outbreaks are epidemiologically associated.

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2. NJDEP Bureau of Law Enforcement – Marine Region

- Prevent illegal harvest by enforcing closure of implicated growing areas.
- Ensure compliance with harvest and transport restrictions including harvest hours and times.
- Enforce vessel requirements including but not limited to shading of harvested oysters.

3. NJ Department of Health

- Ensure compliance with time and temperature restrictions including but not limited to harvester landings, certified dealer and transport.
- Inspect and enforce certified dealers and ensure required cooling times and temperatures are met.
- Epidemiologically confirm and document and traceback for each vibrio (*Vp* and *Vv*) illness consumption case as reported in state or from other authorities. Initiate, communicate and monitor oyster recall if a growing area is implicated as a result of an illness or due to post harvest mishandling initiating a firm specific related recall.
- Notification to NJDEP and FDA of a confirmed *Vibrio parahaemolyticus* illness outbreak.
- Notify the shellfish industry and local health jurisdictions in the state of the potential for illnesses due to *Vibrio parahaemolyticus* prior to historical times of onset or at a minimum of once a year.
- Issue a health advisory to the public about the potential problem and advise the industry to educate wholesalers, retailers, and consumers about the potential problem.

D. Outbreak Response (*Vibrio parahaemolyticus*)

In the event of confirmed cases of shellfish related food borne illnesses caused by the naturally occurring marine bacterium *Vibrio parahaemolyticus*, the New Jersey Department of Environmental Protection (NJDEP) and the New Jersey Department of Health (NJDOH) shall follow the guidelines of the latest version of the National Shellfish Sanitation Program Model Ordinance "Control Plan for *Vibrio parahaemolyticus*".

Pursuant to proposal 13-202 which was adopted by the ISSC and will be incorporated into NSSP, the following actions will be implemented in the event of illnesses associated with *Vibrio parahaemolyticus*:

Shellfish Related Illnesses Associated with *Vibrio parahaemolyticus* (*Vp*)

When the investigation indicates the illness(es) are associated with the naturally occurring pathogen *Vibrio parahaemolyticus*, the Authority shall determine the number of laboratory confirmed cases epidemiologically associated with implicated area and actions taken by the Authority will be based on the number of cases and the span of time as follows.

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1. When sporadic cases do not exceed a risk of one (1) illness per 100,000 servings or involves at least two (2) but not more than four (4) cases occurring within a thirty (30) day period from an implicated area in which no two (2) cases occurred from a single harvest day, the Authority shall determine the extent of the implicated area. The Authority will make reasonable attempts to ensure compliance with the existing *Vibrio parahaemolyticus* Management Plan.
2. When the risk exceeds one (1) illness per 100,000 servings within a thirty (30) day period or when cases exceed four (4) but not more than ten (10) over a thirty (30) day period from the implicated area and when two (2) or more cases but less than four (4) cases occur from a single harvest day from the implicated area, the Authority shall:
 - a. Determine the extent of the implicated area;
 - b. Immediately place the implicated portion(s) of the harvest area(s) in the closed status; and
 - c. As soon as determined by the Authority, transmit to the FDA and receiving States information identifying the dealers shipping the implicated shellfish.
3. When the number of cases exceeds ten (10) illnesses within a thirty (30) day period from the implicated area or four (4) cases occurred from a single harvest date from the implicated area, The Authority shall:
 - a. Determine the extent of the implicated area; and
 - b. Immediately place the implicated portion(s) of the harvest area(s) in the closed status; and if post-harvest handling, temperature abuse is not found to be the cause of the outbreak then the following SOP shall be implemented:
 - i. Promptly initiate a voluntary industry recall consistent with the Recall Enforcement Policy, Title 21 CFR Part 7 unless the Authority determines that a recall is not required where the implicated product is no longer available on the market or when the Authority determines that a recall would not be effective in preventing additional illnesses. The recall shall include all implicated products.
 - ii. Issue a consumer advisory for all shellfish (or species implicated in the illness).
4. When a growing area has been closed as a result of *Vibrio parahaemolyticus* cases, the Authority shall keep the area closed for the following periods of time to determine if additional illnesses have occurred:
 - a. The area will remain closed for a minimum of seven (7) days when sporadic cases do not exceed a risk of one (1) illness per 100,000 servings or involves four (4) or less cases occurring within a thirty (30) day period from the implicated area in which no two (2) cases occurred from a single harvest date from the implicated area;
 - b. The area will remain closed for a minimum of fourteen (14) days when the risk exceeds

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- one (1) illness per 100,000 servings within a thirty (30) day period or cases exceed four (4) but not more than ten (10) cases over a thirty (30) day period from the implicated area with two (2) or more cases but less than four (4) cases occurring from a single harvest date from the implicated area; and
- c. The area will remain closed for a minimum of twenty-one (21) days when the number of cases exceeds ten (10) illnesses within thirty (30) days or four (4) cases occur from a single harvest date from the implicated area.
5. Prior to reopening an area closed as a result of the number of cases exceeding ten (10) illnesses within thirty (30) days or four (4) cases from a single harvest date from the implicated area, the Authority shall:
- a. Collect and analyze samples to ensure that *tdh* does not exceed 10/g and *trh* does not exceed 10/g; or other such values as determined appropriate by the Authority based on studies; and
- b. Ensure that environmental conditions have returned to levels not associated with *Vibrio parahaemolyticus* cases.
6. Shellfish harvesting may occur in an area closed as a result of *Vibrio parahaemolyticus* illnesses when the Authority implements one or more of the following controls:
- a. Post-harvest processing using a process that has been validated to achieve a two (2) log reduction in the levels of total *Vibrio parahaemolyticus* for Gulf and Atlantic Coast oysters and a three (3) log reduction for Pacific Coast oysters;
- b. Restricting oyster harvest to product that is labeled for shucking by a certified dealer, or other means to allow the hazard to be addressed by further processing; and
- c. Other control measures that based on appropriate scientific studies are designed to ensure that the risk of *Vibrio parahaemolyticus* illness is no longer reasonably likely to occur, as approved by the Authority.
7. In the event that a suspension of harvest is required, the following will occur:
- a. Upon receiving verification from NJDOH that a food borne illness outbreak caused by *Vibrio parahaemolyticus* is significantly associated with the consumption of raw shellfish from a New Jersey harvest area, the Commissioner of the Department of Environmental Protection (or his designee) will suspend harvest in the affected harvest area under N.J.S.A. 58:24;
- b. The NJDOH will notify all receiving states and the FDA that a potential health risk is associated with shellfish from the implicated harvest area(s);
- c. As soon as it has been accurately determined, the NJDOH shall advise the FDA and receiving states which dealers have shipped shellfish from the implicated area during the 21 days prior to any event and thru the date of the harvest closure;

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- d. NJDOH initiates and oversees the effectiveness of industry recall of any shellfish from the implicated area remaining in distribution;
- e. If the NJDOH trace back investigation demonstrates that the illnesses are related to post-harvesting contamination or mishandling, closure of the harvest area is not necessary and the closure will be lifted;
- f. Collect oyster tissue and analyze samples to ensure that *tdh* does not exceed 10/g and *trh* does not exceed 10/g; or other such values as determined appropriate by the Authority based on studies; and
- g. Ensure that environmental conditions have returned to levels not associated with *Vibrio parahaemolyticus* cases.
 - i. The areas of harvest closure will be patrolled to insure the cessation of harvest.

E. NJDEP – Marine Water Monitoring *Vibrio parahaemolyticus* Study

To evaluate new management measures, and to measure the effectiveness of new management measures, such as ice slurry, and to reduce the risks of *Vibrio parahaemolyticus* illnesses, NJDEP's Bureau of Marine Water Monitoring will undertake a new 2015 *Vibrio parahaemolyticus* study. The study is being performed with an ISSC and the State of Connecticut will evaluate the effectiveness of ice slurry to keep *Vibrio parahaemolyticus* low, and if ice slurry can reduce levels after exposing to air for 1, 3, and 5 hours. Samples will be collected from the Delaware Bay; the study will compare vibrio levels from oysters(weekly):

- Placed in ice slurry (10 min) upon harvest and then iced;
- unrefrigerated and shaded for 50 minutes, placed in ice slurry (10 min) hours and then iced;
- unrefrigerated and shaded for 2 hours and 50 minutes, placed in ice slurry(10 min) and then iced; and
- unrefrigerated and shaded for 4 hours and 50 minutes, placed in ice slurry (10 min) then iced.

Once each month, samples will be tested as below for comparison to the slurry data and:

- Placed on ice immediately upon harvest;
- unrefrigerated and shaded for 1 hour and then iced;
- unrefrigerated and shaded for 3 hours and then iced; and
- unrefrigerated and shaded 5 hours then iced.

Oysters for the ice slurry study will be harvested from Delaware Bay sub-tidal shellfish beds at the same times that they are being harvested by industry.

The Bureau of Marine Water Monitoring will also be measuring pH, salinity, dissolved oxygen,

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water temperature, air temperature, and shell temperatures.

In addition, the Bureau of Marine Water Monitoring will work with partners to collect New Jersey oyster product from out of state seafood retail establishments to evaluate *Vibrio parahaemolyticus* levels in oyster that have gone through shipping, handling and receiving. This is a first attempt to look at *Vibrio parahaemolyticus* when it reaches the consumer as compared to levels at harvest.

F. Harvest, Transport and Temperature Control Measures

1. In order to minimize growth of *Vibrio parahaemolyticus* which occurs during elevated water and air temperature conditions during harvest, the following conditions are placed on the commercial harvest and handling of oysters from all New Jersey waters from June 1 through August 31, 2014:
2. Definitions - For the purposes of this *Vibrio parahaemolyticus* Management Plan the following terms are defined as:
 - a. *Refrigeration* means mechanical units on harvest vessels or on vehicles used for the transportation of oysters to a certified dealers establishment, which is pre-chilled to a temperature of 45 degrees Fahrenheit (7.2 degrees Celsius) or colder. All efforts will be made to maintain a temperature of 45 degrees Fahrenheit (7.2 degrees Celsius) or colder during harvest and/or transport.
3. General Conditions – These conditions apply to all oyster harvest in all State waters during June 1 through August 31, 2015.
 - a. All existing regulations regarding the harvest, transport and temperature controls remain in effect unless specifically modified by this *Vibrio parahaemolyticus* Management Plan.
 - b. No product may be shipped the same day as harvest without approval from New Jersey Department of Health.
 - c. The Department of Health maintains the requirement for mechanical refrigeration when travel time from the landing site to the certified dealer is 1 hour or more.
 - d. If an oyster harvester places his catch directly in refrigeration on his harvest vessel, the “hours to refrigeration” and the time “oysters must be in refrigeration” contained in the Table F4 below do not apply. All on board mechanical refrigeration and continuous monitoring devices must be inspected and approved by the NJDOH.
 - i. Harvesters planning on adding refrigeration on their vessel shall submit a preliminary design of the refrigeration unit to the Shellfish Resource Recovery Steering Committee (SRRSC) for review of consistency with existing regulations.
 - ii. Harvesters that place their catch directly in refrigeration shall fly a minimum 18” X 18: orange flag with a black diagonal stripe on their vessel so Marine Enforcement is

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aware that “hours to refrigeration” and the time “oysters must be in refrigeration” do not apply.

- iii. Oyster vessels actively harvesting oysters during the *Vibrio parahaemolyticus* season with adequate and approved refrigeration may, within a one hour interval, utilize and fill up to 24 individual bushel baskets on the shaded deck of the harvest vessel prior to placing the oysters into refrigeration in an appropriately tagged oyster cage as required by NJAC 7:25A-2.3, for the purpose of limiting the number of times the unit doors are opened and closed to maximize cooling.
- iv. Harvest vessels who intend to place their catch directly in refrigeration, must notify the Bureau of Law Enforcement – Marine Region at 609 748-2050 prior to their first trip during the *Vibrio parahaemolyticus* Management Plan season. The notification shall include: vessel name, and NJ registration or US Coast Guard documentation number.
- e. Shading of the product must be in place on both the boat (N.J.A.C. 8:13) and during overland transport to the initial NJ certified dealer, unless there is refrigeration on the harvest vessel or transport vehicle.
- f. Harvesters shall employ the use of a hand held laser thermometer on board. The harvester/s will record the time and product temperature (shell and/or meat) of the product at offloading each day.
 - i. Harvesters will record the offloading temperature daily and report that temperature to the first receiving certified dealer.
 - ii. Harvesters will keep the daily offloading temperature log for *Vibrio parahaemolyticus* season on the boat in a bound logbook.
 - iii. If the harvester is also the first receiving certified dealer, offloading temperatures will be kept at the certified dealer's establishment.
 - iv. Harvesters shall submit temperature data to NJDOH upon request.
- g. The first certified dealer will record the receiving temperature of all product when it is received from the harvester at the truck or at the establishment.

4. Hours of Harvest – Sub Tidal (state-wide)

Dates	Hours to Refrigeration ¹	Start of Harvest ²	Oysters must be in Refrigeration ³
June 1 – June 14	7	6:00am	1:00pm
June 15- July 14	6	6:00am	12:00pm
July 15 – July 31	7	6:00am	1:00pm
August 1 – August 31	7	6:00am	1:00pm

¹ Hours to refrigeration are the total number of hours (inclusive of any transport time) from the

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beginning of harvest until the product is placed in refrigeration.

2 Time harvest may begin.

3 Oysters must be in refrigeration no later than the time indicated for the appropriate month, regardless of when harvest began. No oysters may be on a harvesters boat, unless in refrigeration, beyond these times.

5. Harvest from Intertidal Waters and Tide Dependent Harvest (June 1 through August 31)
 - a. Harvest and transport to refrigeration of oysters from the intertidal waters of New Jersey or low tide dependent harvest of oysters is limited to four (4) hours (inclusive of any transport time).
 - i. Intertidal Harvest - The four-hour time period begins after the first oysters to be harvested are exposed to the air by the receding tide.
 - ii. Tide Dependent Harvest - The four-hour time period begins for tide dependent harvest when oysters harvest actually begins. The Fish and Wildlife Bureau of Law Enforcement – Marine Region must be notified at the start of harvest each day.
 - b. Based on NJDEP studies, it is recommended that business practices be modified for intertidal harvesters/growers to minimize the time oysters are exposed prior to refrigeration. This includes, but is not limited to:
 - i. Culling and sorting of market-sized oysters within the 4 hour time limit used for harvest and returning the product to the water for 48 hours. This will minimize the potential for increased vibrio levels in oyster tissue due to sun and warm air temperature exposure and ensure the effectiveness of 48 hour re-submergence. Immediately following the 48 hour re-submergence, the market-sized product can be harvested and transported to refrigeration according to the requirements in section 5a above.
 - ii. Harvest and transport of oysters to refrigeration prior to cleaning and maintaining oyster cages.
 - iii. Priority should be given to oyster harvest and transportation.
6. Additional Recommended Best Management Practices.

The following Best Management Practices are recommended, but not required by the 2015 *Vibrio parahaemolyticus* Management Plan.

*Method, if used, is required to be validated, inspected and approved by NJDOH prior to use.

- a. Evaporative Cooling* – wet or mist oysters with waters (in the Approved classification), stored under required shading to reduce temperatures through evaporative cooling.
- b. Rapid Chilling* – In between dredges, cool oysters in a container of ice and sea water (from Approved classification). The slurry is the most effective way of rapidly cooling shellfish. When the next dredge is brought in transfer oysters in the slurry to a shaded area or into a refrigerated unit.

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- c. Icing* – Layer bushel baskets, bushel bags, or oysters in cages with ice to reduce shell temperatures during transport to landing.
 - d. Reduce time to refrigeration to 5 hours – Keeping the time to refrigeration to a maximum of 5 hours, especially when air temperatures exceed 70 degrees Fahrenheit, is the most effective way to maintain vibrio levels low without direct refrigeration.
 - e. If using onboard refrigeration, limit the number of times the unit doors are opened and closed to maximize cooling.
 - f. Offload boats quickly, get product on a refrigerated vehicle efficiently, and get the product to the certified dealer as soon as possible.
 - g. Shading of shellfish by methods, such as the use of a UV resistant tarp; NJDEP studies suggest that solar radiation can increase the temperature of the shellfish and cause an increase in vibrio levels.
7. Prohibitions for all Harvesters and Certified Dealers
- a. Off-loading of shell stock from boats directly onto interstate trucks intended for same day interstate shipment is prohibited.
 - b. No product shall be shipped the same day it was harvested without prior approval from New Jersey Department of Health.
8. Certified Dealers - Annual Evaluation of the Forced-Air Unit
- a. Certified dealers shall annually conduct an evaluation of their forced-air unit operation.
 - b. The annual evaluation shall contain the following:
 - i. Operating and in good repair;
 - ii. Unit is capable to hold a maximum day's harvest amount while providing adequate circulation of cold air;
 - iii. Unit is capable to hold day's harvest while holding other products;
 - iv. **Cooler Compressor** – Compressors shall be sized adequately to cool product down to (50) degrees F or less (40 degrees is optimum) in 10 hours as required in the NSSP Model Ordinance;
 - v. **Shipping Requirement** - NJDOH wholesale temperature requirement is 45 degrees F in 12 hours (overnight), to ship from a certified dealer. No product may be shipped the same day as harvest without prior approval from New Jersey Department of Health;
 - vi. NJDOH requires verification of adequate refrigeration and cooling prior to certification for *Vibrio parahaemolyticus* season; and
 - vii. Continuous temperature recording unit at the initial certified dealer able to continuously record the ambient temperature of the product with back-up alarm.
 - c. The New Jersey Department of Health has resource information in order to assist your purchase and installation of a recording thermometer on your forced air unit. The cost is inexpensive to install this device.

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- i. The New Jersey Department of Health will not certify the Certified Shellfish Dealer operation unless a continuous recording thermometer is installed on your forced air unit. This will allow New Jersey Department of Health to inspect and insure that your forced air unit is operational and maintaining appropriate temperatures.

9. HACCP PLANS

- a. Certified Dealers shall record the time and the temperature of the product when it is offloaded and received by the Dealer. This can be done by utilizing a laser (infrared) thermometer (gun type) and “shooting” the temperature of the shell or by placing a probe thermometer between the shells and checking the meat.
- b. After being held overnight and before releasing the product for interstate shipment you are to record the time released and the temperature of the product. Product shall not be released for intrastate and/or interstate shipment until 5am after overnight holding. No product may be shipped the same day as harvest without prior approval from New Jersey Department of Health.
- c. The implementation of the HACCP Plans includes monitoring records to indicate the time and temperature as indicated above, the establishment of Critical Limits and Corrective Actions when Critical Limits are Not Met.
 - i. Please alter your HACCP plan for your establishment to state that this will be performed.